



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/705,251

11/12/2003

Takamitsu Higuchi

Q78440

3192

23373

7590

10/20/2005

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

DOUGHERTY, THOMAS M

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/705,251

Applicant(s)

HIGUCHI ET AL.

Examiner

Thomas M. Dougherty

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-83 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Response to Arguments

The applicants' response to the restriction requirement has been carefully considered. As a result, the Examiner has reconsidered the requirement, again in light of the claims. The claims define a broad array of inventions, including methods of making piezoelectric and ferroelectric devices of three or four layers on a substrate, as well as piezoelectric and ferroelectric device structures of three or four layers on a substrate. Further dividing the above inventions are those in which either the piezoelectric or ferroelectric layer, the bottom electrode layer and the intermediate (if present) are made by an ion beam assist method of irradiation which further may include a process in which a sol containing the piezoelectric or ferroelectric film is applied as a coating, dried, degreased and fired. Further dividing the broad array of inventions are those in which either the piezoelectric layer or ferroelectric layer or bottom electrode layer or intermediate layer is comprised of two layers in which one is formed by the ion beam irradiation method and the other layer is formed by the continuing deposition. Further dividing the broad array of inventions are those in which either the surface on which the bottom electrode or the intermediate layer or the piezoelectric or ferroelectric layer is formed is subject to irradiation before the formation of the cited layers.

To advance the prosecution of this case the restriction is presented in terms of four major groups. The previous restriction requirement is thus withdrawn.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-13, 26-28, 32-35, 40-45, 52, 53, 55 and 56, drawn to a method of making a three layer piezoelectric or ferroelectric device, classified in class 29, subclass 25.35 and/or class 117, subclass 108.
- II. Claims 14-25, 29-31, 36-39, 46-51, 54 and 57-59, drawn to a method of making a four layer piezoelectric or ferroelectric device, classified in class 29, subclass 25.35 and/or class 117, subclass 108.
- III. Claims 60-63, 65-68, 72, 73, 77 and 80, drawn to a three layer piezoelectric or ferroelectric device, classified in class 310, subclass 365 and/or class 310 subclass 311.
- IV. Claims 64, 69-71, 74, 75, 76, 78, 79 and 81-83, drawn to a four layer piezoelectric or ferroelectric device, classified in class 310, subclass 365 and/or class 310 subclass 311.

The inventions are distinct, each from the other because of the following reasons:

Inventions of groups I and II and of groups III and IV are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the devices can be made by other means such as by epitaxially growing each layer or by pre-forming each layer and then putting them together by adhesive or pressure, etc.

Art Unit: 2834

Inventions of the respective device groups and the respective method of making groups are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions are differently made with different components arrangements and thus will have different effects.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Direct inquiry to Examiner Dougherty at (571) 272-2022.

tmd
tmd

October 18, 2005


TOM DOUGHERTY
PRIMARY EXAMINER